

IN THE CLAIMS

1. (Currently Amended) A ~~Dispersion~~ optimized fiber having higher spot area comprising a center core region (1) 1, a cladding region (2) 2, a ring core region (3) 3 and an outer glass region (4) 4, wherein the said center core (1) 1 and the said ring core (3) 3 have refractive indices higher than the said outer glass region (4) 4 and the said cladding region (2) 2 has a lower refractive index than the said outer glass region (4) 4, wherein n_1 , n_2 , n_3 and n_4 represent the refractive index of the said center core region (1) 1, said cladding region (2) 2, said ring core region (3) 3 and said outer glass region (4) 4 respectively and the said refractive indices are constrained by the following equations (1-4) ~~equation 1~~:

$$n_1 > n_3 > n_4 > n_2 \text{---(1)}$$

and values of the said refractive indices of the said regions are constrained by the following ~~equations 2-4~~ to make the fiber have ~~having the low slope, the low dispersion and the higher~~ effective area during the C and the L band transmissions:

$$n_1 > n_3 > n_4 > n_2 \quad (1)$$

$$0.008 > (n_1 - n_4) > 0.007 \quad (2)$$

$$0.0018 > (n_3 - n_4) > 0.0014 \quad (3)$$

$$- 0.0005 > (n_2 - n_4) > - 0.0007 \quad (4)$$

~~wherein n_1 , n_2 , n_3 and n_4 represents the refractive index of the said center core region (1) 1, said cladding region (2) 2, said ring core region (3) 3 and said outer glass region (4) 4 respectively.~~

2. (Currently Amended) The ~~Dispersion~~ optimized fiber according to claim 1, wherein

said cladding (2) 2 is provided ~~on an~~ onto the said outer periphery of the said center core (1) 1, and the said ring core (3) 3 is provided ~~on an~~ onto the said outer periphery of the said cladding (2) 2, and the said outer glass region (4) 4 surrounds the said ring core region (3) 3 .

3. (Currently Amended) The ~~D~~dispersion optimized fiber according to claim 1, wherein the fiber is insensitive to micro bend loss and dispersion slope less ~~no more~~ than 0.08 ps/nm².km.

4. (Cancelled)

5. (Currently Amended) The ~~D~~dispersion optimized fiber according to claim 1, wherein the radius of each of the said regions are restricted by the following equations (5-7) ~~8-10~~:

$$a_1 = \text{about } 2.7 \mu\text{m} \quad (58)$$

$$a_2 = \text{about } 6.3 \mu\text{m} \quad (69)$$

$$a_3 = \text{about } 8.8 \mu\text{m} \quad (710)$$

wherein a_1 , a_2 and a_3 represents radius of the said center core region (1) 1, the said cladding region (2) 2 and the said ring core region (3) 3 respectively.

6. (Currently Amended) The ~~D~~dispersion optimized fiber according to claim 1, wherein it comprises single annular ring (2) 2 of germanium and fluorine doped material between a germanium doped said center core (1) 1 and said ring core (3) 3 , and said outer ~~pure~~ glass region (4) 4 is provided ~~onto an~~ onto the outer periphery of the germanium doped said ring core (3) 3 .

7. (Currently Amended) The Ddispersion optimized fiber according to claim 1, wherein ~~the~~ attenuation at 1550 nm is ≤ 0.22 , ~~the~~ dispersion at 1530 to 1565 nm is 2.2 to 6.0 ps/nm.km and ~~the~~ dispersion at 1565 to 1625 nm is 4.0 to 11 ps/nm.km.
8. (Currently Amended) The Ddispersion optimized fiber according to claim 1, wherein a typical ~~the~~ dispersion slope (~~typical~~) is 0.07 ps/nm².km, ~~the~~ Ppolarization Mmode Ddispersion is ≤ 0.1 ps / km^{0.5} and the Mmode Ffield Ddiameter is 9.6 ± 0.4 μ m.
9. (Currently Amended) The Ddispersion optimized fiber according to claim 1, wherein cable ~~the~~ cut off wavelength (~~cable~~) is ≤ 1280 nm, ~~the~~ core concentricity is ≤ 0.6 μ m and typical ~~the~~ effective area (~~typical~~) is 70 micron².
10. (Currently Amended) The Ddispersion optimized fiber according to claim 1, wherein ~~the~~ micro bending (~~Pin-array~~) is ≤ 0.05 dB at 1550 and 1625 nm, and ~~the~~ macro bending (~~single 32 mm mandrel and 100 turns at 60 mm mandrel~~) is ≤ 0.5 dB at 1550 and 1625 nm.
11. (Currently Amended) The Ddispersion optimized fiber according to claim 1, wherein the said cladding region (2) 2 is divided into an ~~two regions~~ inner cladding region (2) 2 and an outer cladding region (4) 4 with the said ring core (3) 3 disposed therebetween.
12. (Currently Amended) The Ddispersion optimized fiber according to claim 11, wherein the fiber comprises the a center core (1) 1, the ~~an~~ inner cladding (2) 2, the a ring core (3) 3, the ~~an~~ outer cladding (4) 4 and the outer glass region (5) 5, and the said center core (1)

† and the said ring core (3) 3 have the refractive indices higher than the said outer glass region (5) 5, and the said inner cladding region (2) 2 and the said outer cladding region (4) 4 have the lower refractive indices than the said outer glass region (5) 5, wherein n_1, n_2, n_3, n_4 and n_5 represent the refractive indices of the said center core region (1), the said inner cladding region (2), the said ring core region (3), the said outer cladding region (4) and the said outer glass region (5) respectively and are constrained by the following equations (9-12) equation (11):

$$n_1 > n_3 > n_5 > n_2 = n_4 \quad (11)$$

and values of the said refractive indices of the said regions are constrained by the following equations 12-15 to make the fiber having the low slope, the low dispersion and the higher effective area during the C and the L band transmissions:

$$n_1 > n_3 > n_5 > n_2 = n_4 \quad (8)$$

$$0.008 > (n_1 - n_5) > 0.007 \quad (9 \text{ †} 2)$$

$$0.0018 > (n_3 - n_5) > 0.0014 \quad (10 \text{ †} 3)$$

$$- 0.0005 > (n_2 - n_5) > - 0.0007 \quad (11 \text{ †} 4)$$

$$- 0.0005 > (n_4 - n_5) > - 0.0007 \quad (12 \text{ †} 5)$$

wherein n_1, n_2, n_3, n_4 and n_5 represents the refractive indices of the said center core region 1, the said inner cladding region (2) 2, the said ring core region (3) 3, the said outer cladding region (4) 4 and the said outer glass region 5 respectively.

13. (Cancelled)

14. (Currently Amended) The Ddispersion optimized fiber according to claim 11,

wherein the said inner cladding (2) 2 is provided ~~on an~~ ~~onto the~~ outer periphery of the said center core (1) 1, and the said ring core (3) 3 is provided between the said inner cladding (2) 2 and ~~said ring core (3) and~~ the said outer cladding (4) 4 is provided ~~on an~~ ~~onto the~~ outer periphery of the said ring core (3) 3, and the said outer glass region (5) 5 surrounds the said outer cladding (4) 4.

15. (Currently Amended) ~~The~~ ~~Dispersion~~ optimized fiber according to claim 11, wherein the fiber is insensitive to micro bend loss and dispersion slope ~~less~~ ~~no more~~ than 0.08 ps/nm².km.

16. (Cancelled)

17. (Currently Amended) ~~The~~ ~~Dispersion~~ optimized fiber according to claim 11, wherein the radius of each of the said regions ~~is~~ ~~are~~ restricted by the following equations (13-16) (20-23):

$$a_1 = \text{about } 2.7 \mu\text{m} \quad (1320)$$

$$a_2 = \text{about } 6.3 \mu\text{m} \quad (1421)$$

$$a_3 = \text{about } 8.8 \mu\text{m} \quad (1522)$$

$$a_4 = \text{about } 10.8 \mu\text{m} \quad (1623)$$

wherein a_1 , a_2 , a_3 and a_4 ~~represent~~ ~~represents~~ the radius of the said center core region (1) 1, the said inner cladding region (2) 2, the said ring core region (3) 3 and the said outer cladding region (4) 4 respectively.

18. (Currently Amended) The Ddispersion optimized fiber according to claim 11, wherein the said fiber comprises two annular rings (2) 2 and (4) 4 of germanium and fluorine doped material between a germanium doped center core (1) 1 and ring core (3) 3, and the outer pure glass region (5) 5 is provided on an ~~onto the~~ outer periphery of the germanium and fluorine doped outer cladding (4) 4.

19. (Currently Amended) The Ddispersion optimized fiber according to claim 11, wherein ~~the~~ attenuation at 1550 nm is ≤ 0.25 , ~~the~~ dispersion at 1530 to 1565 nm is 1.8 to 6.0 ps/nm.km and ~~the~~ dispersion at 1565 to 1625 nm is 4.0 to 11 ps/nm.km.

20. (Currently Amended) The Ddispersion optimized fiber according to claim 11, wherein ~~the~~ typical dispersion slope (~~typical~~) is 0.07 ps/nm².km, ~~the~~ Ppolarization Mmode Ddispersion is ≤ 0.1 ps / km^{0.5} and Mmode Ffield Ddiameter is 9.6 ± 0.4 μ m.

21. (Currently Amended) The Ddispersion optimized fiber according to claim 11, wherein ~~the~~ cable cut off wavelength (~~cable~~) is ≤ 1480 nm, ~~the~~ core concentricity ≤ 0.6 μ m and typical ~~the~~ effective area (~~typical~~) is 70 micron².

22. (Currently Amended) The Ddispersion optimized fiber according to claim 11, wherein ~~the~~ micro bending (~~Pin-array~~) is ≤ 0.05 dB at 1550 and 1625 nm, ~~the~~ macro bending (~~single 32 mm mandrel and 100 turns at 60 mm mandrel~~) is ≤ 0.5 dB at 1550 and 1625 nm.